THE

VETERINARY JOURNAL

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Editorials.

THE EDUCATIONAL ADVANTAGES OF FOREIGN TRAVEL.

To the younger ones, whether of our profession or any other, the value of foreign travel cannot be over-estimated, and even the older and wiser ones can learn something.

Those who had the good fortune before the war to attend the International Congress Meetings can bear witness to the pleasure and advantages gained by personal communication with our Continental colleagues, their fine universities and schools, their abattoir and public health systems, not forgetting the interchange of opinion and ideas of treatment between practitioners. It is always refreshing to see and hear the difficulties experienced by others, and encouraging to interchange ideas as to which is the best way out.

An announcement on another page gives particulars of a trip at Whitsuntide which has been so arranged that it will take in the very fine and up-to-date veterinary college at Brussels ; and a further trip in September which visits five out of the seven University Veterinary Schools of Italy, and includes a stay in Rome in time to attend the Congress of Comparative Pathology, which commences on the 20th. The subjects to be discussed at this Congress include, amongst others, Nerve Regeneration, the Cancer Problem, Foot and Mouth, Rinderpest, Piroplasmosis, Mange, Ringworm of Man and Animals, Bee Disease, Silkworm Disease, and Grape Vine Disease too. The President is Professor Perroncito, a man whose name is of world-wide celebrity. It was he who first demonstrated the disease known as Ankylostomiosis amongst the miners working in the famous St. Gothard Tunnel. His

fame as a parasitologist is without rival, and the veterinary profession has reason to be proud of him and of his work. It was due to his researches that the carbon-disulphide treatment as a remedy for bots in the stomach of the horse was perfected, and in a score of other ways he has gained the approbation of his colleagues. To meet him will be an honour, and the hospitality of our Continental friends almost rivals our own. Let the matter receive mature consideration, and the party which is now being formed will, one has reason to hope, be of sufficient size and weight to creditably represent the veterinary profession of Great Britain.

FURTHER LINKS BETWEEN THE HUMAN AND VETERINARY BRANCHES OF MEDICINE.

A GREAT deal of attention has been drawn lately to the necessity for a more complete understanding between the human and veterinary branches of medicine, and for the establishment of facilities for the study of Comparative Medicine. The medical and veterinary Press have devoted considerable space to the subject, and it has also received prominent notice in the lay Press too.

There is no doubt that it is a step in the right direction, and that, by pulling together, the two professions will benefit mutually, besides being of greater service to the community than if they worked in water-tight compartments.

Substantial progress in regard to the *rapprochement* between the two professions was made last year by the combined meetings of the Royal Society of Medicine and the Central Branch of the National Veterinary Association, and the former has now opened its doors to the veterinarian, who is admitted in exactly the same way and to exactly the same privileges as his medical *confrère.*

About forty members of the veterinary profession, some of whom are practising in the Provinces, and some even so far away as Scotland, have recognised the value of more intimate contact with the work of human medicine, and have been elected as Fellows of the Royal Society of Medicine, thereby obtaining access to all the lectures and papers, the social evenings, the "Proceedings," and the splendid library. The latter is probably the best medical library in the world.

The Sections of Medicine and Pathology have each elected a veterinary surgeon on their respective Councils, so that our profession is now represented there. Papers of comparative interest will be considered and fully discussed, if brought forward by veterinarians.

The National Veterinary Association has now joined the Federation of Medical and Allied Services, and their delegate has been elected to

a place on the Medical Council of the Executive of that body. This Federation, founded in October, 1918, was described in the speech of the Minister of Health, delivered May 26 of last year, as "a body whose aim is wide and public-spirited, and marks a thoroughly wise departure from the usual purposes of professional associations."

Its objects are, briefly, "To provide the means whereby societies and individuals interested in health may meet to form and express, in the interests of the community, considered and collective judgment to guide the formation of public opinion; to protect the community against ill-advised or misdirected legislation affecting health; and to assist in securing, for the nation, adequate representation in Parliament of professional opinion on health."

The Federation is formed by the co-operation of societies and individuals, both professional and lay, and it would have been a mistake for the profession not to have joined. Its branches include, in addition to representatives of human medicine, those of dentistry, veterinary science, pharmaceutical chemistry, nursing, midwifery, massage, medical gymnastics, radiography and welfare work; and the combined membership adds up into many thousands. By pulling together each branch can help the other, and it cannot be other than a huge power for good, especially in public health work.

Moreover, at the forthcoming annual Congress of the British Medical Association, to be held at Glasgow in July, a veterinarian has been asked to prepare a paper, in conjunction with a scientific colleague, upon "Animal and Vegetable Pathology in relation to Human Disease." Veterinary surgeons will be asked to attend and join in the discussion, an entirely new proceeding, and one which we hope will be accepted and taken full advantage of when the times comes. It will be an opportunity to make ourselves felt and to prepare the way for much more warm-hearted and friendly feeling in the future than has ever existed before between two professions.

THE IMPORTANCE OF A KNOWLEDGE OF THE MINISTRY OF HEALTH REGULATIONS FOR MEAT INSPECTORS.

THE great importance for every member of the veterinary profession to be *au fait* with what is being done in regard to the subject of meat inspection, under the Ministry of Health, is unquestionable, and for this reason we are publishing in full in another column the recently published regulations. Uniformity is what is aimed at, and the only way to attempt to attain that is by agreement upon what is the standard to be passed and what should be rejected. The statements are clear, and we recommend them for the perusal of our readers.

Original Articles.

For Official Use. Memo. 62/Foods.

MEAT INSPECTION.

MEMORANDUM ON A SYSTEM OF MEAT INSPECTION RECOMMENDED BY THE MINISTRY OF HEALTH FOR ADOPTION BY LOCAL AUTHORITIES AND THEIR OFFICERS.

[*Enclosed with a Circular Letter issued to Local Authorities by the Minister of Health* (*Circular* 282, *date* 16*th March*, 1922).]

GENERAL OBSERVATIONS FOR THE GUIDANCE OF INSPECTORS AND BUTCHERS.

*A.—ANTE-MORTEM INSPECTION.

Where practicable it is desirable that all animals should be inspected before slaughter, the object being to ascertain that each animal which it is intended to slaughter is in a satisfactory state of health. In cases of doubt as to the healthiness of the animal the meat inspector should notify the veterinary inspector, if one has been appointed for that purpose, and his instructions should be observed. Where ante-mortem inspection of animals is not practicable or has not taken place, the butcher should notify the meat inspector or medical officer of health in any case in which he has doubt as to the healthiness of any animal, who should take immediate steps to have the animal examined before slaughter.

B.—DUTIES OF BUTCHERS AND SLAUGHTERMEN.

(i) Evidence of disease in a carcase should not be modified or obliterated by washing, rubbing, stripping or in any other manner, except under the direct supervision of the meat inspector and in accordance with his instructions.

(ii) In no case either of "back bleeding," "over-sticking" or "sticking-in" should stripping of the serous membrane be permitted, except by or under the direction of the meat inspector, and in any such case in which immediate stripping is necessary to preserve the marketability of the carcase the membrane should not be entirely detached from the carcase until it has been examined by the meat inspector and he has authorised the detachment.

* It should be noted here that, in accordance with the provisions of the Diseases of Animals Acts and Orders made thereunder, every person having in his possession or under his charge an animal affected with, or suspected of being affected with, anthrax, cattle plague, pleuro-pneumonia, foot and mouth disease, sheep pox, sheep scab, swine fever, epizootic lymphangitis, glanders and farcy, rabies or parasitic mange, is required to give notice of the fact to a constable of the police force for the police area. The meat inspector should immediately transmit any information of a similar nature coming within his knowledge to a constable or to the inspector of the local authority under the Diseases of Animals Acts.

(iii) Notification of intention to slaughter animals *for emergency reasons* should be forwarded to the veterinary inspector, meat inspector or medical officer of health, and so far as practicable all such animals should be examined at the time of slaughter. If not so examined the carcase and the whole of the viscera should be detained until it has been examined by the meat inspector and a decision given.

In cases where such an animal is examined at the time of slaughter, the inspector may require the carcase and the whole of the viscera, unless obviously unfit for food, to be detained for 24 hours thereafter to enable a later inspection to be made.

All carcases of such animals as may subsequently be passed for human consumption should be ribbed or quartered before being released.

(iv) When any dead or moribund animal is admitted into a slaughter-house immediate notification of the fact to the veterinary inspector, meat inspector, or the medical officer of health, should be made by the owner or person in charge of the animal, and as soon as practicable after receipt of the notification an inspector should examine such carcase or animal.

(v) Tuberculous carcases or carcases presenting lesions of other disease should not be wiped down with the ordinary wiping cloth, and the cloth that has been used for such purpose should not again be used until it has been boiled for 15 minutes in water containing soda.

(vi) Where the carcase has not been examined by the meat inspector at the time of slaughter the whole of the viscera and offal should be kept pending inspection in such a way as to enable them to be identified, by labelling or otherwise, with the carcase from which they have been removed.

C.—General Instructions to Inspectors.

(i) Every effort should be made to inspect the carcases and viscera of all animals slaughtered within the area.

(ii) Knives that have been used for cutting any diseased organ, gland or tissue should not again be used for any purpose until they have been disinfected in boiling water or other suitable disinfectant.

(iii) The carcase of an animal that is free from disease in the carcase and organs, and which is well nourished, should be passed as fit for human consumption.

(iv) When all diseased portions have been removed from a carcase under the supervision of a meat inspector in accordance with the instructions below, the remainder of the carcase should be passed as fit for human consumption.

(v) If disease is found in any part of a carcase or in any organ the whole carcase and all the organs should be examined for evidence of

any repetition of the local condition, or modification thereof in other parts, according to the following plan.

D.—Method of Examination of Carcases.

The following instructions indicate the order and method of inspection of all carcases :—

Section I.—General Principles to be Observed.

1. *Viscera.*

(*a*) All viscera shall be examined as they are removed from the carcase, or in such circumstances as will ensure that they are the viscera of a particular carcase.

(*b*) Every organ and the associated lymph glands shall be examined by the eye and by palpation. When any abnormal condition is observed, the nature and significance of which cannot be determined by such examination, the organ and or gland shall be incised and the incisions shall be made in such manner as to avoid soiling or contaminating or unnecessarily depreciating the value of any part of the carcase or other organs that may be passed as fit for human food.

(*c*) The efficient examination of lymph glands shall be by multiple incisions into their substance.

2. *Carcase.*

(*a*) The carcase shall be examined for (1) condition of nutrition ; (2) evidence of bruising, hæmorrhage or discolouration ; (3) local or general dropsy (œdema) ; (4) the efficiency of bleeding ; and (5) swellings or deformities of bones or joints or swellings or other abnormality in the musculature.

(*b*) The serous membranes (pleura and peritoneum) shall be examined in every case, and in no case shall they be removed nor shall any evidence of disease be modified or obliterated by washing, rubbing, stripping, or in any other manner before examination.

(*c*) After the carcase is split the sternum, ribs, vertebræ and spinal cord shall be examined.

Section II.—Detailed Instructions for Routine Inspection of Carcases of Bovines and Swine.

1. *Head.*

The head, including (*a*) the surface and substance of the tongue (which shall be loosened but not detached before examination), (*b*) the palate or roof of the mouth, and (*c*) the lymph glands of the throat (retro-pharyngeal, submaxillary and parotid), shall be examined, and the cheek muscles shall be examined by a linear incision parallel to the lower jaw.

2. *Abdominal Cavity.*

(*a*) *Stomach, Intestines and Spleen.*—The outer, and when necessary the inner, surfaces of the stomach and intestines, and the surface and

substance of the spleen shall be examined, together with the glands of the stomach and bowel (gastro-splenic and mesenteric) and the web (omentum).

(*b*) *Liver.*—The surface and substance of the liver shall be examined. The associated glands (hepatic) shall also be examined and the bile ducts incised where necessary.

(*c*) *Kidneys.*—The lymph glands of the kidneys (renal) and the adrenal glands shall be examined before the removal of the kidneys. Thereafter the kidneys shall be exposed, and the surface examined and, if necessary, the kidneys shall be split by incision and the substance examined.

(*d*) *Uterus and Ovaries.*—The inner and outer surfaces of the uterus and the substance of the ovaries shall be examined.

[NOTE.—In reporting upon lesions included in paragraphs 2 (*a*), 2 (*b*) and 2 (*d*), special attention shall be paid as to whether the lesions affect the peritoneal surface or the organ itself. Unless care in this connection is evinced statistical records become misleading.]

3. *Thoracic Cavity.*

The pluck shall be examined before the various organs are separated from each other, and the following examination shall be made :—

(*a*) *Lungs.*—The lungs shall be examined by observation and by palpation, and, unless obviously diseased, they shall be incised at the base. The associated lymph glands (bronchial and mediastinal) shall also be examined, and, unless obviously diseased, shall be incised.

[NOTE.—In reporting upon lesions included in paragraph 3 (*a*) distinction should be made between lesions affecting the pleura and those affecting the lung substance (parenchyma).]

(*b*) *Heart.*—The heart sac (pericardium) shall be opened and the heart examined and if necessary incised.

[NOTE.—In reporting upon lesions in paragraph 3 (*b*), distinction should be made between lesions of the pericardium, myocardium, and endocardium.]

4. *Udder.*

The udder shall be examined by observation and palpation, incisions shall be made at the base of the teats, and also into any indurated region in the substance of the gland and the associated glands (supra-mammary) shall also be incised.

5. *Testicles and Penis.*

The outer surface and the substance of the testicles and penis and the superficial inguinal glands shall be examined.

6. *Serous Membranes.*

The lining (serous) membranes of the chest and abdomen (pleura and peritoneum) shall be examined in every case.

[NOTE.—It will be observed that in *all* cases the following glands must be examined as a matter of routine, *viz.* :—(1) Retro-pharyngeal (in bovines) and submaxillary (in swine) ; (2) bronchial and mediastinal ; (3) hepatic and (4) mesenteric.]

Section III.—Instructions as to Additional Inspection where Evidence of Tuberculosis has been discovered in Bovines or Swine.

Where as a result of inspection in accordance with Section 2 evidence of tuberculosis has been detected, the carcase and viscera shall be examined in accordance with the following instructions :—

1. The viscera and the associated lymph glands shall be examined for evidence of tuberculosis both in the substance and in the covering membranes (capsules). *The existence of tuberculosis in the lymph gland of an organ shall be held to be evidence of the disease in the organ.*

2. All the usual lymph glands which are examined in meat inspection work (other than those already enumerated), *viz.* :—the lower cervical, pre-sternal, supra-sternal, sub-dorsal, pre-scapular, supra-mammary (or superficial-inguinal), iliac and sub-lumbar glands ; and, if considered necessary, the pre-crural and popliteal glands shall be exposed and examined by incision in every case of tubercle. Those glands which, having regard to visible evidence are least likely to be infected, shall be examined, first *e.g.*, if evidence of tuberculosis is found on the pleura the glands of the hind quarter shall be examined before those of the forequarter.

3. The carcase of a pig in which lesions of tuberculosis are found in any situation or in any degree shall be split and the vertebræ examined. The kidneys in such a carcase should be freed, but not necessarily detached from the enclosing fatty tissue, the surface should be carefully examined, and if lesions are obvious or suspected, incisions should be made into the substance.

Section IV.—Instructions as to Action to be taken in the event of Evidence of Tuberculosis being found in Bovines and Swine.

A.—*Organs.*

An organ shall be seized when tuberculosis exists on its capsule, or in its substance, or in the associated lymph glands.

B.—*Head.*

1. The head, including the tongue, shall be seized if any of the lymphatic glands or the head are affected.

C.—*Carcase.*

1. The entire carcase and organs shall be seized when the following conditions are found :—(*a*) Tuberculosis with emaciation ; (*b*) Generalised tuberculosis.

NOTE.—In determining whether the disease is generalised, the judgment shall be based on the sum of the evidence of disease throughout the entire carcase and organs. The following conditions shall be regarded as evidence of generalisation :—

(1) Miliary tuberculosis of both lungs. (*Note.*—This regulation is subject to the following qualification :—In minor instances of miliary tuberculosis of the lung, without evidence of tuberculosis elsewhere and provided the miliary tubercles are not numerous and not of recent origin, it may be possible to pass the carcase. But miliary tuberculosis of the lung even in such a case is evidence of previous systemic infection, and the decision as to whether such a carcase should be condemned should devolve upon the veterinary inspector or the medical officer of health.)

(2) Where lesions are multiple, acute, and actively progressive.

(3) Where there is multiple and widespread infection of the carcase lymph glands.

(4) Where there are diffuse acute lesions of both serous membranes (pleura and peritoneum) and any of the carcase lymph glands are enlarged or contain visible tuberculous lesions.

(5) Where, in addition to the presence of tuberculous lesions in the respiratory or digestive tracts, there are also lesions present in the substance of any one of the following—spleen, kidney, udder (or uterus or ovary), testicle, brain and spinal cord or their membranes. (*Note.*—Notwithstanding this instruction instances may be found where it would be justifiable to pass the carcase after condemnation of the affected organ. Absence of signs of activity, such as calcification or definite encapsulation would be favourable indications. The decision as to whether such a carcase should be condemned should devolve upon the veterinary inspector or the medical officer of health.)

(6) Congenital tuberculosis in calves.

2. All cases of tuberculosis not included in the immediately foregoing regulation shall be regarded and treated as localised lesions, and the parts containing the lesions and contiguous thereto shall be condemned.*

3. If an organ or portion of a carcase becomes contaminated by tuberculous material it shall be treated as if it were a case of localised tuberculosis.

* It will be understood that this memorandum is concerned with the conditions under which meat should be condemned as unfit for human food. The decision as to any legal action which may follow such condemnation rests, of course, with the Local Sanitary Authority.

Section V.—Instructions as to action to be taken in the event of evidence of other Disease being found in Carcases of Bovines, Swine, Sheep or Horses.

A.—The entire carcase and all the organs shall be condemned if evidence of any of the following conditions is found :—

1. Actinomycosis, generalised.
2. Anæmia (if pronounced).
3. Anthrax.*
4. Blackleg.
5. Bruising, general, extensive and severe, with or without gangrene.
6. Cysticercus bovis (measly beef), if generalised in the meat substance.
7. Cysticercus cellulosæ (measly pork), if generalised in the meat substance.
8. Decomposition (general).
9. Dropsy, general.
10. Emaciation, general pathological (associated with disease).
11. Erysipelas, acute swine.
12. Fever (acute).
13. †Foot and mouth disease.*
14. Glanders (or farcy).*
15. Immaturity, stillborn or unborn carcases.

Immaturity.—A carcase shall be considered too immature to produce wholesome meat if—

(*a*) The meat has the appearance of being water-soaked, is loose, flabby, tears easily, and can be perforated with the fingers ; or

(*b*) Its colour is greyish-red ; or

(*c*) Good muscular development as a whole is lacking, especially noticeable on the upper shank of the leg, where small amounts of serous infiltrates or small œdematous patches are sometimes present between the muscles ; or

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* See footnote on page 156.

† The decision as to whether animals affected with this disease shall be slaughtered or otherwise disposed of rests with the officers of the Ministry of Agriculture and Fisheries. If the carcases and organs of such animals are submitted for human food, the decision as to their fitness for this purpose should devolve upon the Medical Officer of Health or Veterinary Inspector authorised or appointed by the Local Authority. In any case, where it is found that the disease is strictly localised, that no signs of septic infection are present, and that there is entire absence of any indication of fevered condition, such as wasting, hyperæmia of the internal organs or of the lymphatic glands and of other complications which may arise as sequelæ of the disease, it will be for the consideration of the officers mentioned whether the carcase may be passed for human consumption after removal of the head and feet.

(*d*) The tissue which later develops as the fat capsule of the kidneys is œdematous dirty yellow or greyish-red, tough and intermixed with islands of fat.

16. Jaundice.

17. Lymphadenitis, caseous.

18. Malignant catarrhal fever.

19. Malignant neoplasms—unless localised, in situation and effect, to one organ.

20. Mammitis, acute septic.

21. Melanosis, generalised—or any generalised pigmentation.

22. Metritis, acute septic.

23. Uræmia (or carcases having a urinous odour).

24. Pericarditis, septic.

25. Pneumonia, gangrenous.

26. Pyæmia—including joint-ill, or umbilical pyæmia.

27. Rickets with malnutrition.

28. Sarcocysts—if generalised in the musculature and visible to the naked eye.

29. Septicæmia, or septic intoxication.

30. Swine fever.*

31. Tetanus.

32. Trichinosis.

33. Tumours, multiple, in musculature.

B.—In all cases in which evidence of diseases not enumerated in Instructions A above is found, the organ or portion of the carcase (or organs or portions of the carcase) affected by the disease, and the organs or portions contiguous thereto, shall be condemned.

Circular. (*England.*)
Sanitary Authorities (*London and Provinces.*) CIRCULAR 282.

MINISTRY OF HEALTH,
Whitehall, S.W.1,
16th March, 1922.

SIR,

I am directed by the Minister of Health to draw the attention of the Council to the recent report of the Departmental Committee on Meat Inspection, and to state that he is in general agreement with the views of the Committee. The Minister has at present under consideration the question how far it is practicable and desirable under present conditions to give effect to such of the recommendations of the Committee as require the introduction of legislation and the issue of regulations, and further circulars will be issued with regard to these

* See footnote on page 156.

matters as occasion may arise. At this stage the Minister wishes to bring before the Council and their officers certain matters in regard to which action may be taken under the present law.

Uniformity in Meat Inspection.

The Committee draw attention to the fact that there exists considerable diversity as regards both (*a*) the amount of inspection actually carried out in different districts ; and (*b*) the standards of judgment and practice of individual inspectors. Apart from objections on public health grounds, lack of uniformity in these matters has the effect of imposing unequal liabilities on traders according to the standard of inspection adopted, and in localities where little or no inspection is carried out serious embarrassment is caused to honest traders owing to the absence of any check on unscrupulous methods.

Variations in Amount of Inspection.

In paragraph 12 and elsewhere in the Report the Committee draw attention to the variation in the amount of inspection carried out by different authorities and they consider that measures should be taken to reduce to a minimum the number of carcases which are placed on the market without inspection at the time of slaughter. The Minister is entirely in sympathy with the views of the Committee on this point, and while he cannot at the present time recommend the increase in the inspecting staff of local authorities which might be desirable in other circumstances, he hopes that all local authorities will give the matter early consideration with a view to adopting such means as lie in their power to ensure that a large proportion of the meat killed within their district shall receive effective inspection. In this connection the Minister would draw attention to the recommendations of the Committee as to concentration of slaughtering. With a view to removing some of the existing difficulties the Committee recommend (paragraphs 28–33) that steps should be taken to secure the concentration of slaughtering in as few slaughter-houses as possible. Such a course would both facilitate the inspection of meat at the time of slaughter and enable a larger proportion of animals to be killed under conditions which conform to the requirements of public health. Apart from any legislative action which may be taken in this matter it seems to the Minister that in many cases a local authority might be able to initiate a co-operative arrangement amongst the local butchers under which a number of the less sanitary buildings would cease to be used as slaughter-houses and fuller use would be made of the better equipped buildings. In towns where this course would not involve any serious difficulties of transport it might often result in a financial advantage to the butchers, as the buildings so set free would be available for other purposes. In preparing schemes special regard should be had to the principles laid

down in paragraph 30 of the Report and to the rules 1 to 12 set out on pages 5 and 6 of the prefatory memorandum to the Ministry's Model Bye-laws as to slaughter-houses.

Variations in Standards of Judgment and Practice of Individual Inspectors.

This subject was referred to by the Royal Commission on Tuberculosis which reported in 1898 and following the report of that Commission the Local Government Board, in circulars dated March 11, 1899, September 6, 1901, and September 7, 1904, recommended to local authorities certain principles laid down by the Royal Commission for the inspection of cattle and pigs. It was the intention of the Royal Commission that these principles should be elaborated to form a code of instructions for the use of meat inspectors. The Departmental Committee on Meat Inspection have prepared a detailed code of instructions of this kind which appears in an Appendix to their Report.

The Minister understands that this code has been framed in accordance with the general principles laid down by the Royal Commission with the exception that the Committee did not think that the presence of a small amount of tuberculous deposit in a pig should necessarily involve the condemnation of the whole carcase. It has been found to be desirable, on practical grounds, to modify the Committee's Schedule in a few small particulars. A copy of the instructions as amended is printed in the accompanying memorandum and it is hoped that their careful study and adoption in practice by all inspectors and other persons concerned will go far towards eliminating the disadvantages which have resulted in the past from lack of uniformity in this respect.

Qualifications of Inspectors.

The Committee say in paragraph 22 of their Report :—

> " The ideal staff for meat inspection work would consist of men possessing a considerable knowledge of pathology both human and animal, but the cost of such a staff would be prohibitive.
>
> " The alternative is in the direction of a staff of officers of two grades, namely :—
>
> " (*a*) Lay inspectors* who possess sufficient knowledge of the work to be able—
>
> " (i) to recognise abnormalities ;
>
> " (ii) to decide and interpret a definite schedule of meat inspection, and
>
> " (iii) to recognise cases, the decision in respect of which requires more expert knowledge than they possess.
>
> " (*b*) Expert meat inspectors appointed for a large area who

* It is understood that by the term " lay inspector " the Committee mean a sanitary inspector holding a Meat Certificate (but not a qualified veterinary or medical practitioner).

would generally supervise the work of the lay inspectors and would assist in cases of difficulty.

"In many of the larger towns veterinary work in connection with the milk supply and tuberculosis amongst cattle has resulted in the appointment of a veterinary officer attached to the Health Department, and to these officers might well be given the duties of the expert meat inspector.

"In the rural and smaller urban districts it would be advantageous if the services of the county veterinary officer appointed for similar purposes to those in the larger towns could be utilised for the purpose, and we hope that the county councils whose officials already co-operate with those of the smaller local authorities in various other matters would be willing to facilitate such an arrangement where circumstances permit it."

The Committee refer further to the subject of co-operation between local authorities in paragraph 25 in which they suggest that authorities having charge of large markets or public abattoirs should arrange for definite demonstrations to be given at intervals, at which not only the inspectors in their employment but also inspectors from a considerable surrounding area might attend.

The Minister concurs in these views and hopes that local authorities will see their way to adopt them as opportunity offers.

An extra copy of this circular and of the memorandum is enclosed for the use of the Inspector concerned with meat inspection. A copy has also been sent direct to the Medical Officer of Health. The memorandum will be placed on sale and further copies may be purchased through any bookseller or direct from His Majesty's Stationery Office, Kingsway, London, W.C.2; and 28, Abingdon Street, London, S.W.1; 37, Peter Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 23, Forth Street, Edinburgh; or from Eason and Son, Ltd., 40 and 41, Lower Sackville Street, Dublin.

I am, Sir,

The Town Clerk
or
The Clerk to the Council.

Your obedient servant,
A. K. MACLACHLEN,
Assistant Secretary.

Clinical.

OBSERVATIONS ON AN EXTENSIVE HUMAN INFECTION BY SARCOPTIC MANGE OF THE HORSE.

By A. S. MACDONALD, B.Sc., M.R.C.V.S. (*Edinburgh.*)

THE circumstances of this outbreak are peculiar, though not entirely unprecedented. A class of veterinary students were engaged upon the performance of post-mortem operations on a horse. The horse had a history of generalised sarcoptic mange, the disease having gained such a hold that it was considered an unsound economic pro-

position to proceed further with treatment. It was destroyed one Saturday morning at 10 a.m., and thereafter was left lying upon a concrete floor while the students in question palpated, dissected, and operated upon the carcase for a period of time which varied with the individual from two to five hours.

Contact.

Of the students who had any contact with the carcase in question, approximately 53 per cent. became infected. On the other hand, the non-infected individuals were either those who were engaged upon the head and neck (which parts had been cured by the previous treatment) or those who had been little more than onlookers, in that they had been engaged in swabbing incisions, etc., to assist the actual operators. In short, of these students whose hands and clothing came into direct and prolonged contact with the infected carcase 100 per cent. complained of subsequent symptoms.

Symptoms.

The most constant symptoms common to every case were :—

(*a*) Itch of a most pronounced and continuous nature, accentuated by surface warmth, induced by exercise, by lying in bed, and by friction in the process of inunction of the affected areas.

(*b*) A papular eruption. This was present in all the affected cases at the site of contact with the carcase—*i.e.*, forearms, ankles, and calves of the legs. The hands in most cases, though not in all, escaped infection, no doubt owing to washing with carbolic soap immediately after, or in some cases during, the work on the dead subject. In some cases the forearms escaped while the ankles were affected or *vice versa*. Lesions on the shoulders, upper arms, trunk, and thighs occurring in some of the students were in all cases secondary, there being no direct track of infection on the skin. The papules were the size of a large pin's head, of a fiery-red colour, and were slightly elevated above the surface of the surrounding skin. They seemed to correspond to hair-follicles, and the crops were luxurious. It is perhaps significant that in Case A (referred to later) the interdigital spaces were the seat of the infection ; here also the papules were more circumscribed, more elevated, and slightly pointed.

Treatment.

From the strictly scientific point of view it may be regarded as somewhat unfortunate that the affected individuals were all well versed in the life-history and pathogenicity of *Sarcoptes scabiei*, and that the morbid conditions were therefore rapidly recognised, and curative measures taken accordingly. It might be noted here that the sooner the infection was realised the more easily was a cure effected. Thus, in B's case, after two hours' work on the carcase he became

aware of an intense itching on the right forearm, with some slight hyperæmia of the part. He at once painted the area with weak tincture of iodine and had no further trouble at that point. Eight hours later similar lesions appeared upon the calves of the legs. Tinct. Iodi. was again applied and the eruption disappeared in one day. Case C became aware of infection before leaving the establishment at 1 p.m., but considered the violent itch to be a form of scabiophobia. At 2.30 p.m. he examined the lateral aspect of the calf (an area of contact with the carcase) and found the cause of the itch to be the typical papular eruption. He at once took a hot bath and scrubbed the affected area for some minutes with a stiff nail-brush. The area was dressed with 1 in 10 sulphur ointment until two days after infection, by which time the irritation had disappeared, although the eruption did not entirely subside until two days later. Case A itched during the first day and only awoke to the situation on the second day. He became ultimately affected with the typical papular eruption in the interdigital spaces, all over the arms, as well as almost all over the legs. This is one of the few cases with sequelæ.

The treatment adopted varied in detail, but, generally speaking, consisted in scrubbing the whole body and especially the affected areas in a hot bath to which was added some coal-tar disinfectant or washing-soda. This was followed by inunction with a preparation in which sulphur was the chief ingredient, adjuvants being salicylic acid, ammonium sulphide, ol. picis, etc. The presumably infected clothing was in most cases cast off at once pending disinfection. In connection with the latter point one notes that Cases D and E report no trouble on the Saturday of infection, nor on the following Sunday—when different suits were worn—but on the Monday, when the suits worn on the Saturday were resumed, they became typically infected. Case F applied pure creosote to each papule with the aid of a match-stick. This treatment relieved the itch, but had no effect on the eruption, and on the Wednesday he fell into line with the hot scrubbing and sulphur applications.

Sequelæ.

A few cases reported a slight dermatitis, which was relieved by the use of ordinary emollients such as Ung. Zinci. Case F seems to have induced a pustular dermatitis. These dermatites were doubtless due to the enthusiastic scrubbing and inunction. Case A is of special interest. After spending three days in bed in a state of acute discomfort (all the while treating himself with a sulphur ointment) he developed a diffuse dermatitis, which affected all parts of the body, including the face. This was succeeded by a pompholyx due to a streptococcal infection from which he was still suffering more than three weeks

after the incidence of the infection. In this case there is also a history of an attack of scabies during infancy.

Microscopy.—The carcase was scraped on the Sunday morning—*i.e.*, 24 hours after death. *Sarcoptes scabiei* were found to be present in abnormally large numbers.

One concludes from the above observations that the mites migrated from a killed and chilling equine host to human hosts, passing through the clothing with little delay, and setting up irritation in a period varying from 2 to 24 hours.—(*The Lancet, April* 15, 1922)

STRANGULATED INTRA-ABDOMINAL HERNIA IN A MARE.

By J. J. O'CONNOR, M.R.C.V.S.,
Professor of Surgery, Royal Veterinary College of Ireland.

Subject.—A six-years old cart mare.

History.—The mare was an inveterate kicker in harness, and showed symptoms of oestrum at the same time. In the stable she appeared normal. On December 20th ovariotomy was performed on her with a view to cure this trouble. The operation was easily and expeditiously done and the mare was perfectly normal after it, until the morning of December 28, when she showed symptoms of colic of a continuous nature. She remained lying, constantly looking round at herself, but only made three or four attempts altogether to roll.

Her pulse when the pain first appeared was 42 and her temperature 100.8. She left none of her food of the previous evening, which consisted of good hay and a bran mash. There was the usual quantity of normal fæces in the box.

Diagnosis and Treatment.—At first the case appeared to be ordinary colic. She was treated with 1 gr. of arecaline hydrobromate hypodermically. This only caused salivation, not having the slightest effect on the bowel. After about three-quarters of an hour another grain was administered, also without effect, and about half-an-hour later a further dose of 1½ gr. was given without causing even the passage of flatus. Along with the last dose of arecoline a draught containing

Ol. lini.	.. .. ..	oj.
Spts. Ether Nit.	.. ..	℥ii.
Ol. Terebinth	.. ..	℥i.
Tinct. Nucis Vom.	.. ..	℥ii.

was given, and an enema of soap and water was injected but returned immediately. Obstruction of the bowel was diagnosed; the prognosis was considered grave as the pulse became frequent and weak, hardly perceptible towards evening, and the patient became more

feeble and dejected. Then the following draught, as well as 3 gallons of saline solution, were given through the nasal tube :—

Chloral	..	..	..	℥ii.
Ol. lini.	..	..	..	oi.
Tinct. Nuc. Vom.	..	..		℥ii.
Spts. Ether Nit.	..	..		℥ii.

The mare died about 18 hours after the commencement of the pain.

Post-Mortem revealed hernia of a loop of the ileum about 2 ft. in length in a rupture of the mesentery, with intense inflammation of the herniated mass, and lesions of peritonitis on the large colon in the vicinity of the strangulation.

There was no trace of peritonitis in the region of the uterus or pre-pelvic region. All the fluid given the previous evening was in the stomach and small intestine, anterior to the hernia.

NOTES ON TETANUS.

By W. R. DAVIS, M.R.C.V.S.,
Enfield.

It is usual to associate tetanus with deep wounds, or with wounds in which there are pockets, such as one sees in cases of broken knees. Text-books on human and veterinary surgery are unanimous in emphasising the danger of tetanus as a sequel to such wounds. (Williams stated, however, that he had seen it follow the application of a blister.) In the following cases observed by me recently there were no wounds of such a nature.

An aged bay gelding turned out for the winter was found down in the field and unable to rise. There were convulsions at intervals, but not very marked. On learning the nature of the malady the owner had the horse destroyed. There were a few superficial wounds from barbed wire on the off hind quarter.

An aged bay mare doing farm work; well-marked case of tetanus. She had not been lame, and was stated not to have had a wound. On lifting the tail I found a suppurating patch where the crupper had caused an excoriation. The patient got down in the night and died the next day.

A fine young carthorse, the property of the Enfield U.D.C., was in a dust-van at the shoot. The driver went behind the van and the horse started off; both horse and van rolled down the "tip," and lay broadside in a refuse fire that had been burning for eighteen months. The unfortunate animal was got out as quickly as possible, but was severely burnt on the off-side, particularly about the flank and shoulder. Olive oil and solution of subacetate of lead were applied for the first two days; afterwards picric acid in olive oil, also iodoform, prepared

chalk, and starch powder. The patient did very well, but on the twelfth day tetanus developed, and the animal died two days later.

A black gelding, eight years old, suffering from lymphangitis, but thought by the owner to have sprained its leg, was fomented and rubbed with some "sharp oils," and as a result of their application became blistered. The lameness persisting, I was called in. I gave a dose of physic and applied simple ointment to the blistered surfaces, and in a few days the horse was walking fairly sound. A week later I found the patient suffering from tetanus, and in spite of antitetanin injections it died.

A very valuable thoroughbred yearling was noticed to be going lame in the near hind leg. The stud groom could find nothing to account for the lameness, but the patient was kept in a box, and the limb fomented. After some days the filly, apparently all right, was again turned out during the day. I was called in a week afterwards and as I found the patient lying in the box in convulsions from acute tetanus, I destroyed her by giving an intravenous injection of prussic acid. A very careful examination of the affected limb and the rest of the body failed to reveal any trace of wound. The case of tetanus after burns might make one doubtful of the security afforded by searing the stump after docking, and hints at the risk of the malady accruing subsequent to firing the limbs.

A CASE OF MILK FEVER BEFORE PARTURITION.

By C. A. POWELL, M.R.C.V.S.,
Woburn.

A RED non-pedigree shorthorn cow, a good milker, due to calve on April 7, with the sixth calf; she had gone down with milk fever the previous two years in succession, after calving, but recovery in each case had been quick and uneventful.

On March 18 she was found down and showing symptoms of milk fever. On arrival, I found her down and in an open yard, symptoms not acute, but presenting those met with in an ordinary case in the early stage. I inflated the udder, tied teats with tapes, and gave an injection of strychnine. The next morning I had a telegram saying the cow was still down, but no worse. She had been struggling about and making ineffectual attempts to rise, being able to get her hind quarters up but not the fore ones. I re-inflated the udder and repeated the strychnine injection. Also left a dose of liq. strychninae to be given at night, and again in morning. The next morning, Monday, she got up about 5 o'clock and calved a live calf about half-past six. She was very unsteady all that morning, but this, however, passed off without further treatment.

Four days afterwards she developed septic trouble from retained placenta. This was removed with difficulty, when the cotyledons were found necrotic, eventually sloughing off. There was diarrhœa accompanied with pain, swelling of the off hock joint, and loss of appetite. Antiseptic irrigations of the uterus, together with the administration of stimulants and tonics per orem were given, and the animal is now, March 30, on a fair road to recovery.

THE TREATMENT OF CANKER.

By WM. LOTHIAN, M.R.C.V.S.,
Duns, Berwick.

LATELY I have had two cases of canker in horses' feet which have yielded to treatment in a manner which makes me think it is well worthy of further trial. This disease of horses' feet has always been rightly considered of an intractable nature. I feel confident, judging from the ready manner my two cases recovered, that the disease has lost much of its formidable and disappointing character.

No. 1.—A Clydesdale gelding. The near hind foot affected, the whole frog, large part of sole, and part of the inside wall. As much as possible of the horn was taken away, and the animal was then cast, foot washed clean, removed from the hobble and tied to the corresponding fore leg. Tourniquet applied, chloroform administered and all horn removed until absolutely healthy tissue was reached. All excessive growth or diseased tissue was then cut away; for this treatment I tried to avoid removing the matrix, so that the horn would grow, and the dressing be applied without fear of causing any damage to the underlying sensitive tissues. Now in this case I can't say that I was quite satisfied with the way the diseased tissue was cut away, as, unfortunately, one of the attendants upset the chloroform bottle, and there was not quite sufficient left to keep the animal perfectly quiet for the remainder of the time required. For a few days after this the foot was dressed with boric acid and iodine, then an ointment composed of copper acet., carbolic acid and treacle applied. Not improving as I would like, the three sulphates (iron, copper, and zinc) made into a paste with vaseline and carbolic acid were then tried; applied, of course, with pressure from rolls of tow held in position with the iron plate fitted to the shoe, and a bandage. Still no better results, and I now made up my mind that the case would end in failure.

It occurred to me that if there was any good effect in the three sulphates, that was destroyed by their being made into a paste or ointment, as the vaseline prevented the active ingredients from coming into immediate contact with the diseased tissue. I decided to

try equal parts of copper, zinc, and iron sulphates (the latter exsiccated) as a dry dressing, and the results of this were immediate improvement. The dry dressing was freely applied, and the foot packed with tow. After two or three dressings the foot became quite dry, hard, firm; healthy horn formed and no further treatment was given.

No. 2 was a bad case. A Clydesdale gelding, and, as in No. 1, the near hind foot affected. Cast, chloroformed and cut out, the same as the first case. Before healthy tissue was reached the whole of the horn of the sole was removed, and fully 3 ins. of the inside wall to the coronary band. Shoe with sheet-iron sole fitted on, and dressed for first few days with tinct. iod. and boric powder. Then a mixture of two parts boric acid pulv. and one part of the sulphates. Next equal parts, and afterwards the three sulphates without the boric acid. This case did well and improved rapidly. It was dressed every second or third day for a fortnight (removing and paring away any newly formed horn), then at intervals of a week, which made the time under treatment a month.

Now two cases are certainly not sufficient to warrant anyone to say that treatment with the three sulphates applied as a dry dressing would be an effectual remedy every time. Still, from the very satisfactory manner in which these two cases responded, I am tempted to report them in the hope that other practitioners may try it and give their experiences.

DIVERTICULUM OF THE ŒSOPHAGUS IN A DOG.

By J. J. O'CONNOR, M.R.C.V.S.,
Professor of Surgery, Royal Veterinary College of Ireland.

Subject.—A small, smooth-haired fox-terrier.

History.—The dog while out with its owner ran into a butcher's shop and picked up a piece of bone, gulping it down at once. Afterwards the animal showed difficulty in swallowing even liquids, and when solid food was partaken of, it at once caused vomiting and was returned. It was fed on milk.

Diagnosis.—The history indicated obstruction of the œsophagus by the piece of bone, but the œsophageal sound could be passed, apparently into the stomach, without any obstruction, and water administered was swallowed with hardly appreciable difficulty. Apomorphia was injected and caused vomiting. It was thought then that there might be obstruction of the pylorus or intestine, but there was no stoppage of the bowels, the fæces being copious enough and fairly liquid, and nothing abnormal could be felt through the abdominal wall. *X*-rays and exploratory laparotomy were suggested, but neither

was tried. The dog lived for about six months afterwards on liquid diet. For a while it seemed improved in condition and solid food was tried, but it caused great distress and vomiting. Post-mortem examinations revealed a diverticulum of the œsophagus on the thoracic side of the diaphragm, containing a piece of flat bone. The capacity of the pouch was about that of an afternoon teacup.

NOTES ON TREATING MASTITIS WITH FORMALIN.

By ALFRED SAVAGE, B.S.A., D.V.M.,
Manitoba Agricultural College, Winnipeg, Canada.

SINCE the use of formaldehyde *per os* in cases of bovine mastitis was described by Frost (1) in 1917, this method of treatment does not seem, in my opinion at least, to have gained the wide adoption which it merits. Thus, quite recently, Pugh (2), having given half-ounce doses twice daily, failed " to observe any undue beneficial effect that could be definitely ascribed to the internal medicaments."

I have encountered many mastitis cases during the past three years and treated most of them with complete satisfaction by this means. Moreover, I have heard little else than praise for the method from the many owners and herdsmen to whom I have recommended it. Therefore I would like to emphasise a few points, some of which may have been overlooked by those who are not enthusiastic concerning this means of treating a condition that very frequently imperils the usefulness of dairy cattle.

Unless supported by other lines of treatment, formalin cannot reasonably be expected to produce results except in very mild cases. I have found it necessary, as a general rule, to supplement it by :—

1. A brisk saline purge, and

2. Insisting that the udder be repeatedly massaged and stripped of its milk (or whatever name should be applied to this pathological material) many times daily.

This second point is of importance. It helps to bring some of the formaldehyde during its elimination in contact with the many recesses of the gland ; breaks up the clotted or coagulated material within the udder ; and stimulates circulation. In severe cases, where it is necessary or desirable to support a much swollen udder by means of a sling, holes may be cut in this to allow of milk being drawn.

Concerning the dose, I think that many are too cautious ; they err on the safe side. When cattle as large or larger than most Ayrshires come under treatment, I have nearly always given them a full ounce of formalin twice daily. This may be put down their throats in capsules ; though I prefer, when possible, to give it as a drench in a

quart of *very cold* water on each occasion. The amount required to cause untoward results is well above this. I remember one herdsman who, in my absence, gave a two-year old Holstein, newly-calved, *three ounces at one dose!* The animal looked pretty " groggy " for a day; but the garget disappeared in record time.

The following table summarises seventeen cases of mammitis that occurred during one year in a large herd at an institution. It illustrates fairly well the comparatively short duration of this condition when taken in hand promptly, and vigorously treated with formalin and the supplementary measures mentioned above. Most of these cases occurred shortly after the animals freshened. In no instance did the condition spread to neighbouring animals.

My notes on cases Nos. 8 and 9 are missing. Case No. 6 was a failure; treatment was not conscientiously maintained, and the affected quarters became partly indurated.

Case No.	Breed	Quarters affected.	Type	Infection.	Reaction of milk.	Amount of formalin given, c.c.	Duration of case.
1	H	L.H.	P	S. strep.	acid 1.0	30 B.I.D.	36 hrs.
2	A	R.H.	P.S.	Strep.	acid 3.2	30 B.I.D.	48 hrs.
3	H	R.H.	P	L. strep.	acid 1.9	30 B.I.D.	72 hrs.
5	A	R.F.	P	Mixed	acid 2.4	30 U.I.D.	48 hrs.
7	A	B.H.	P	S. strep.	acid 0.8	30 B.I.D.	24 hrs.
10	A	L.F.	C	Strep.	acid 1.0	30 U.I.D.	48 hrs.
11	H	R.H.	P	Strep.	acid 1.8	30 B.I.D.	36 hrs.
12	H	L.H.	C	S. strep.	acid 2.2	30 B.I.D.	56 hrs.
13	H	B.H.	P	Strep.	acid 1.6	30 B.I.D.	48 hrs.
14	H	B.H.	P	Strep.	acid 1.4	30 B.I.D.	36 hrs.
15	H	R.F.	P	Strep.	acid 1.0	30 B.I.D.	24 hrs.
16	A	B.H.R.F.	P	L. strep.	acid 1.6	30 B.I.D.	30 hrs.
17	H	B.F.	P	Strep.	acid 2.1	30 B.I.D.	48 hrs.
18	H	R.H.	P	Mixed	acid 1.8	30 B.I.D.	abscess.
19	H	B.F.	P	Strep.	acid ...	30 B.I.D.	36 hrs.
20	H	L.H.	P	L. strep.	acid 0.4	30 B.I.D.	36 hrs.
21	A	L.F.	P	Strep.	acid 1.6	15 B.I.D.	6 days.

Breed.—H indicates Holstein; A, Ayrshire.

Type.—P indicates parenchymatous; C, catarrhal; S, severe. Those cases in which the milk was abnormal without the quarter being obviously affected are classed as catarrhal.

In addition to internal medication with formalin, most of these animals were given a liberal dose of mag. sulph. Their udders were also rubbed with turpentine liniment.

The last case to come under my care was a cow that had given more than 20,000 lbs. of milk during her previous lactation period. She developed a severe mammitis in both hind quarters on freshening, this autumn, and, on account of her capacious udder, promised to be a serious case. Thanks, however, to a devoted attendant and frequent doses of formalin she recovered completely in three days.

While extolling the value of formalin in the treatment of mammitis, it is only reasonable to admit it has limitations. It will not reduce an indurated quarter, neither will it prevent abscessation when that process is under way. In chronic cases it is not so useful as in acute—in fact, it may take a second place to autogenous vaccines. Like any other means of treatment, it shows to best advantage when applied early and thoroughly. It may be relied upon, however, to do as much internal disinfecting as anything yet proposed for this purpose; its administration need not interfere with a practitioner's pet ideas on the handling of these cases, and I, for one, am very much in favour of it.

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A NOTE ON THE POSTERIOR PRESENTATION IN THE COW.

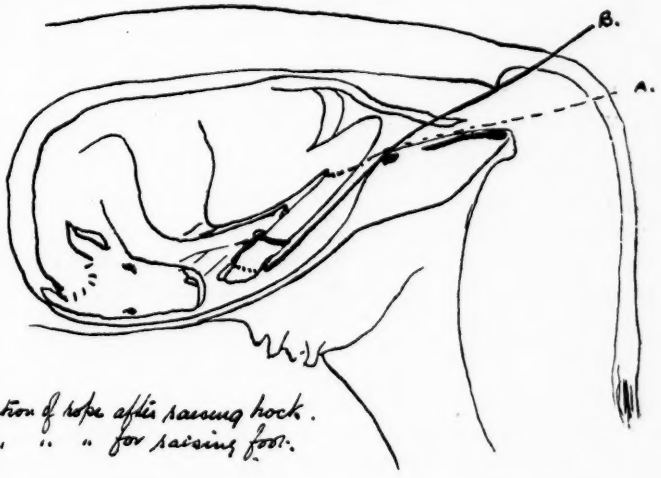
By H. TUDOR HUGHES, B.Sc., F.R.C.V.S.,
Oswestry.

HAVING been struck by the comparative ease and readiness with which this mal-presentation in the ewe may be rectified as compared with the same state of affairs in the cow, I was prompted to think upon the matter to discover the reason and enquire whether there was any means of rendering readjustment more easy and safe in the cow.

With a lamb it is possible to control with one hand both the point of the hock (with the thumb and forefinger) and the toe, maintaining the latter fully flexed upon the fetlock (with the little finger). With a calf (for want of a bifurcated arm with a hand at each extremity) it is impossible to act in the same manner, but having noticed in the lamb that my little finger frequently took its place between the claws I had a notion that the calving rope might be made to do for the calf what one encompassed with one's little finger for a lamb.

At first I tried putting a rope round the pastern and then fetching the free portion between the claws, having first of all brought up the hock by hand or with another rope. This method was not an unqualified success, as the hold round the pastern was not sufficiently secure and dependable, but results served to show it was based on the right lines. I now use the same rope employed for bringing up the hock to flex and bring up the digit in the following manner :—The hock having been brought up, tension upon the calving cord is relaxed, whilst the operator carries, or, rather, pushes, the loop from the upper part of the

metatarsus to its lower extremity, just above the fetlock joint, with the loop towards the front of the fetlock. Gentle tension upon the calving rope at this juncture serves to secure a good grip of the loop above the fetlock joint, but must not be of such a degree as to pull the loop or eye of the calving cord round to the back of the fetlock joint. The next step is to get the rope down between the claws, and the tension must be relaxed whilst this is being done, preferably by following the free portion of the rope emerging through the eye lying at the front of the fetlock joint, pushing it down along the front of the pastern until it can be got into position between the claws. If this should prove difficult a loop may be formed in the slackened cord about six or nine inches along its course from the secured fetlock



and carried down along the side of the pastern and over one claw into the cleft of the foot. In doing this one needs to be particularly careful not to entrap a fold of the fœtal membranes or else future progress will be impeded.

Having got the rope into position tension should be applied from outside whilst the operator brings the foot into a position of as great volar flexion as possible and smooths out any uterine folds that this procedure may have caused. The tension on the rope keeps the foot flexed, and the operator is now able to give his whole-handed attention to the repulsion of the hock and the protection of the point of the os calcis. As the hock is being repelled the rope should be pulled, and in an increasingly upward direction, with the object of lifting

the foot clear of the brim of the pubis, and so straightening the limb and bringing it into the passage.

The other hind limb is dealt with in the same manner, when delivery is readily effected.

The foregoing description refers to the breech presentation, but is equally applicable to the hock presentation.

A CASE OF DEVELOPMENTAL INTERSEXUALITY IN *BOS DOMESTICUS.*

F. A. E. CREW, M.D., D.Sc.
(*Paper from the Animal Breeding Research Department, University of Edinburgh*).

THE animal described in this paper belonged to Mr. A. B. Williamson, Home Farms, Brancepath, co. Durham, who was good enough to furnish the following information concerning it :—" The beast was out of an apparently quite normal Irish heifer, which, however, was never used again. It was a single calf. During the first year of its life it behaved as a heifer—its water, instead of coming naturally, used just to trickle from the vulva, often right down its tail. I never actually saw it in use or standing to another beast. During the last 15 to 18 months it developed a much more masculine appearance—a distinct bull's head—was a perfect nuisance if among heifers, but grazed quietly with bullocks. I never considered it a good thriver, and I do not think it did much good during the last four to six weeks of fattening, hence probably the butcher's remark, ' It was not an ideal carcase of beef.' "

Mr. Harry Peele, M.R.C.V.S., Chief Veterinary Inspector of Durham, who saw the animal several times during its life, noted that " there was apparently a rudimentary penis protruding out of the vulva, and urine was constantly trickling from it. The female organs predominated. There were no signs of a scrotum or testicles in life, and the animal had a more heifer than bull appearance."

When the beast was slaughtered, Mr. Williamson, appreciating the possible interest of the case, sent the organs of generation to Mr. Harry Peele, who handed them to Professor Hobday. The latter, knowing of my interest in the subject of the physiology of reproduction, very generously passed the specimens on to me for examination.

The Genitalia (Fig. 1).

On the right side a gonad having the appearance of an imperfect testis, measuring 3.5 × 3.5 × 1 cms., and clasped by a well-defined epididymis from the tail of which a ductus deferens takes origin.

On the left a mass of fat almost completely replacing the gonad. From out of the fatty mass a ductus deferens emerges.

In the mid-line a bicornuate uterus, with a body 2 cms. in length, a cervix 2 cms. long and 1 cm. thick, and poorly flexuous cornua 11 cms. long, and near their origin 3 cms. in diameter, but tapering to 1 cm. at their blind termination close to the site of the gonads. Succeeding the cervix is a distended vagina 11.5 cms. by 12 cms. in diameter with no posterior orifice, being a closed sac distended with thick fluid content. Each ductus deferens can be traced as a thick pipelike structure running in the genital fold near its dorsal border, and in its first part parallel to the uterine horn, to become incorporated in the ventral wall of the body of the uterus and of the vagina, and to end close to the blind termination thereof.

The vagina was incised and 275 ccs. of a thick grey-yellow glairy fluid evacuated. This fluid was examined at the Laboratory of the Royal College of Physicians of Edinburgh and the report is as follows :—

"The fluid gives reactions of benzidin and tolidin tests for blood pigment, but no bands seen in the spectrum. Microscopically—deposit consists chiefly of a large number of pus cells and a few streptococci."

The wall of the vagina is smooth and glistening. The ducti deferentia, having passed in its ventral wall to a point near the blind termination, open into its cavity. The cervix is of normal appearance and in the cornua numerous typical cotyledons can be seen.

The urinary bladder, urethra, and vulva, with a phallus in its ventral commissure, were separate from the utero-vaginal mass when received for examination, but it was evident that when *in situ* the blind posterior end of the vagina had been united to the dorsal wall of the urethra in the region of the prostate. The bladder is normal in structure, and from its neck the urethra passes to open into a small contracted vulva, 3 cms. long, and is surrounded by the cavernous tissue of the imperforate erectile organ. The internal surface of the bladder is covered in patches with what appears to be an inflammatory exudate. On section, the wall presents unmistakable evidence of a mild but chronic streptococcal cystitis.

The external urethral orifice is the only one which communicates with the vulva : no passage exists between vulva and vagina.

Seminal vesicles, prostate, and bulbo-urethral glands are present, but are very poorly developed.

On section, the gonad has the histological structure of a degenerate testis. (Late fixation is probably responsible for some of the histological findings.) The seminiferous tubules are few in number, small, and obviously atrophic. They are surrounded by a thick fibrous layer. The epithelial cells are greatly elongated and peripherally are separated from one another by wide gaps. Centrally they tend to anastomose

and fuse with a syncitium of degenerate desquamated cells lying in the lumen. The nuclei are oval, often somewhat shrunken and irregular in outline, and are situated in the middle of the cell's length or toward the end nearest the centre of the lumen. They consist of a number of chromatin granules and threads contained in a lightly stained area. No sign of spermatogenesis or mitosis can be found.

Intertubular tissue is present in large quantities and interstitial cells, being very numerous, occur in large diffuse groups and are oval or polyhedral in shape. A large ovoid nucleus containing numerous chromatin granules occupies the greater part of the cell. The cytoplasm is strongly acidophil.

A number of large cells of peculiar shape are present in the intertubular tissue, and occur either singly or in groups (Fig. 1, D). In some instances they are elongated or fusiform in shape. The nucleus is large, ovoid, and contains a number of chromatin granules and in some cases a nucleolus. The staining reaction of these cells is similar to that of the interstitial tissue; their significance is not known. The rest of the gonad is composed of white fibrous tissue. There is a rich blood supply, while the tunica vaginalis is normal and well developed.

The tissue embedded in the mass of fat occupying the site of the left gonad proved to be a highly degenerate testis and epididymis. The testis consists of a number of very small seminiferous tubules of irregular cross-section, which are situated to one side of the gonad. The other half of the organ is devoid of tubules and consists entirely of intertubular tissue. The seminiferous tubules give place to irregular branching vessels, very degenerate in character, which appear to be the rete testis. The germinal epithelium consists of a single layer of somewhat elongated cells with oval nuclei. The lumina of most of the tubules are filled with desquamated cells and cell detritus.

The stroma is composed of connective tissue in which occur interstitial cells in groups or singly. These are polygonal or ovoid in outline and contain a well-marked oval nucleus. As in the opposite gonad, the cytoplasm is strongly acidophil.

There is a rich blood supply, a large vascular plexus being present at both sides of the gonad and a considerable number of vessels occurring in the stroma.

The tunica albuginea is well developed. It is split towards one end of the section by a large wedge-shaped mass of fat cells.

The epididymis evinces considerable degenerative change; the epithelium shows no histological detail and is shrunk away from the wall of the tube. There is a plentiful connective-tissue stroma. The seminal vesicles, the prostate, and the bulbo-urethral glands present the normal structure, but exhibit no evidence of activity.

FIG. 1.—The Internal Genitalia, dorsal view. Dorsal wall removed.

(*A*) C. Cervix. Ep. Epididymis. F. Fat enclosing the left gonad. G.F. Genital fold. Ts. Testis. U.H. Cornu of uterus. V. Vagina. V.D. Ductus deferens (in ventral wall of vagina).

(*B*) Sketch showing the relation of the parts. B.U. Bulbo-urethral glands. P. Prostate. S.V. Vesiculæ seminales. U. Urethra. U.B. Urinary bladder. V. Vagina.

(*C*) The external genitalia. C. Cavernous tissue. Ph. Phallus. U. Urogenital cleft.

(*D*) Types of the peculiar cells found in the intertubular tissue of the Right gonad (× 650). Interstitial cells drawn to the same scale are shown alongside them.

The uterus (Fig. 2) has an external serous layer, a thick muscular layer containing longitudinal and circular sublayers, and a still thicker endometrium containing numerous tubular glands which open into the uterine cavity and are covered with an epithelial layer continuous with the epithelium of the uterine inner surface. In the stroma of the endometrium there are many gorged blood vessels and blood corpuscles in great numbers are lying outside the vessels. There is no denudation of the epithelium and no streptococci are to be found in the mucosa. Vagina and cervix present the normal structure.

The uterus presents the histological features of the organ just previous to or during that phase of the œstrous cycle known as "the stage of destruction."

Discussion.

The animal accepted as an imperfect female during the first year of its life, assumed during the second the characters of an imperfect male—a rig. It was not a free-martin, but could have been :—(1) a male (by sex-determination) in which, during the whole of its intra-uterine and the first twelve months or so of its extarta uterine life, sex-differentiation was in abeyance ; or, (2) a female (by sex-determination) in which incomplete sex-reversal had taken place. Of these alternatives the former seems to offer the more satisfactory interpretation of the conditions found, but it involves the conception that in the absence of the specific differentiating agent the embryonic rudiments of the sex equipment in response to the common stimulus of nutriment can each one pursue a very considerable development. From the Wolffian ducts spring the epididymi, ducti deferentia, and the vesiculæ seminales ; from the Müllerian ducts, the uterus, cervix, and vagina ; from the urogenital sinus, the urogenital cleft with its phallus, Cowper's glands, and the prostate.

Sex-differentiation involves nothing more than differences in degree and direction of the development of embryonic structure commonly possessed by individuals of both sexes. In the normally and timeously developing male embryo the development of the Müllerian ducts is inhibited at an early stage, but in most adult males remnants of these ducts persist as the hyadtids of the testes and the uterus masculinus. In the normally developing female embryo it is the development of the Wolffian ducts that is suppressed, but in most adult females vestiges of these can be identified in the ducts of Gärtner, the epoöphoron and paroöphoron. The development of the structures of the embryonic urogenital sinus conforms to the male or to the female plan. Remnants of the prostatic tubules are commonly found in the floor of the vestibule of the normal adult female.

The distinctive male or female secondary sexual characters and

sexual behaviour are exhibited at a later stage in the development of the individual, as the gonads mature. If sex-differentiation did not occur, the result would be the production of an individual such as the case under discussion—with absence of the secondary sexual characters, external genitalia of an embryonic type, and an accessory reproductive apparatus consisting of equally well developed male and female structures. Such a creature, though in external appearance more closely resembling a female than a male, actually would exhibit the condition of sex-neutrality.

In this case the vagina had secured no connection with the urogenital cleft. This implies that the fused vaginal cords (formed by a

FIG. 2.—Section of the wall of the uterine horn. × 55.

proliferation of the epithelial lining the vaginal tracts of the developing Müllerian ducts) did not completely become canaliculised and did not reach the urogenital sinus in their growth.

But after a twelvemonth or so sex-differentiation occurred and the gonads became testes, though doomed to imperfection because of their abdominal situation. The structures of the accessory reproductive apparatus and the external genitalia were already too full-grown to be affected. Behaviour and the secondary sexual characters, on the other hand, could be and were affected and histological examination of the gonads showed that therein were abundant interstitial cells—the cells usually recognised as being responsible for the stimulus which provokes the development of the appropriate secondary sexual charac-

ters and the exhibition of sexual behaviour—in the rig usually extravagant and often perverted.

The uterus had the structure of that organ during " the period of destruction." The pus within the vagina had its origin in blood derived from the uterus. Of this there can be no doubt. The question which cannot be satisfactorily answered is this : Was there an endometritis (streptococcal) producing a pustular exudate into the vagina, or did the healthy uterus undergo the various phases of the œstrous cycle, so that extravasated blood collected in the vagina, there later to become infected ?

The histological features of the uterine mucosa lend support to the latter view and it is known that the fluid retained within cystlike cavities is prone to infection. But this view demands that the uterus can pass through the œstrus cycle in the entire absence of ovarian tissues and so cannot easily be accepted.

On the other hand, the uterine mucosa can have become infected by streptococci from the bladder and may have thus become stimulated to pathological growth which in many ways resembled the structure of a healthy uterus during " the phase of destruction " of the œstrous cycle.

Had the content of the vagina been blood and not pus, a definite statement as to its significance could have replaced a hesitating suggestion. The examination of this case must remain incomplete since the other endocrine glands were not available.

What may have been a somewhat similar case was briefly reported by A. C. Willett in the VETERINARY JOURNAL, v. 22, p. 82, 1913.

In conclusion I wish to thank Mr. Williamson, Mr. Harry Peele, and Professor Hobday, for the stimulating interest which has been mine during the examination of this case, also Miss Honor B. Fell for her assistance in the preparation and examination of the sections.

INVAGINATION AND PROLAPSE OF THE BOWEL IN A HARRIER PUPPY.

By J. J. O'CONNOR, M.R.C.V.S.,
Professor of Surgery, Royal Veterinary College of Ireland.

Subject.—A four-months old harrier puppy in good condition.

History.—On the morning of the previous day the puppy was found with about 5 ins. of bowel protruding behind the anus. A veterinary surgeon diagnosed the case as prolapse with invagination. He returned the prolapse into the abdomen, but could not reduce the invagination. The prolapse soon recurred, and the case was then sent to me.

Symptoms.—The puppy presented a very dejected appearance.

The prolapsed mass was about 5 ins. long, firm, dark red and cold. Some drops of blood came from its distal extremity. Manipulation of it caused pain. A probe was passed between the prolapse and the pelvic wall and extended into the abdomen for a distance of five or six inches from the anus.

Treatment was applied the moment the animal arrived. It was was easy to push the prolapse into the abdomen, but reduction of the invagination by ordinary measures was out of the question. Consequently, laparotomy was performed at once, and the invagination was reduced by direct manipulation of the bowel, that is by pressure with the fingers and thumb behind the affected part. Traction on the invaginated part had no effect, and if persisted in would have torn the mesentery of the bowel.

Inside the abdomen the invagination was about 10 ins. long. There were distinct fibrinous adhesions between the serous surfaces of the invaginans and the invaginatus, where the invagination commenced, and it required considerable force to break them. The bowel was much thickened at this point, and the pressure created on it here ruptured its serous and longitudinal muscular coats, exposing the circular muscular fibres.

Having completely reduced the invagination the mesentery at the origin of the intussusception was sutured to the abdominal wall with two catgut sutures. There was an elongated collection of serum beneath the peritoneum of about the dimensions of a finger at the mesenteric attachment to the bowel. This was pricked with a needle and the fluid allowed to escape.

Prognosis.—Was gloomy, as the bowel seemed much altered and there was a considerable amount of local peritonitis, and the patient seemed very dejected.

Result.—The next morning the dog was quite bright, wagging its tail and taking milk greedily. Recovery was uninterrupted. A month afterwards the patient was reported as being in splendid form.

NEW RECORDS OF NEMATODES FROM SHEEP AND CATTLE IN BRITAIN.

By THOMAS W. M. CAMERON, M.A., B.Sc., M.R.C.V.S.
From the Department of Zoology, University of Edinburgh.

SHEEP.

THE following Nematodes have been reported from the intestine of sheep in Britain (Boulenger, 1914) :—

Family Strongylidæ.

Sub-family Strongylinæ.

Bunostomum trigonocephalum Rudolphi.

Chabertia ovina Fabricius.

Oesophagostomum venulosum Rudolphi.

Sub-family Trichostrongylinæ.

Hæmonchus contortus Rudolphi.

Ostertagia circumcincta Stadelmann.

Ostertagia trifurcata Ransom.

Cooperia oncophora Railliet.

Nematodirus filicollis Rudolphi.

Trichostrongylus instabilis Railliet.

Trichostrongylus vitrinus Looss.

Trichostrongylus extenuatus Railliet.

Family Angiostomidæ.

Strongyloides papillosus Wedl.

Family Trichinellidæ.

Trichuris ovis Abildgaard.

To this list the three following Nematodes fall to be added as the result of my recent examination of material from sheep in Scotland.

Sub-family Trichostrongylinæ.

Cooperia curticei Railliet.

This species has been found frequently during the course of routine examination of material from the intestine of sheep at the Slateford Abattoir, Edinburgh. The whole of the sheep examined were of Scottish origin, and the majority were from the Highlands. Altogether about 100 specimens were noted, and the proportion of the sexes was about two males to three females. It seems worth while recording the occurrence of this species in Britain, as hitherto it appears to have been recorded only from America* (Ransom, 1911). The dimensions of the Scottish specimens agree with those from America. Among a collection of parasites from Dumfriesshire in the possession of Professor Ashworth are some specimens of *C. curticei* which had been identified by Dr. C. L. Boulenger. Apparently, however, he never published the record.

Nematodirus spathiger Railliet.

In the past much confusion has existed between this species and *N. filicollis* Rud. Boulenger (1914) states that all the specimens he examined in England belonged to the species *filicollis*, differing from *N. spathiger* in the absence of the dorsal lobules of the bursa and in the shape of the terminal membrane of the spicules which is lanceolate, not spatulate. May (1920) has revised the genus and in a key to the species differentiates between the two species as follows :—

Dorsal lobes of bursa not distinctly set off from lateral lobes, spicules with sharp point .. .. .. *filicollis.*

---

* See note under "Cattle."

Dorsal lobes of bursa more or less distinctly set off from lateral lobes, spicules with spatulate point .. .. *spathiger.*

It is impossible to distinguish the females of these two species.

Both species have been frequently taken from sheep killed at Slateford, and *spathiger* seems to be about as common as *filicollis.*

Family Trichinellidæ.

Capillaria longipes Ransom.

This worm has hitherto only been recorded from sheep in America by Ransom (1911). Five specimens—two males and three females—were obtained from the small intestine of sheep of Scottish origin slaughtered at Slateford. The characters of the worm agree in all respects with Ransom's description.

I have to thank Professor Ashworth, Edinburgh University, for so kindly placing at my disposal his collection of Nematodes from sheep.

CATTLE.

To the list of Nematodes parasitic in cattle have to be added two species which do not appear to have been hitherto described from this host.

Sub-family Trichostrongylinæ.

Cooperia curticei Railliet.

This species was described from cattle by Schnyder in 1906, but the material obtained by him was examined by Ransom, who pronounced the species to be *C. oncophora* Railliet. The present specimens —one male and two females—undoubtedly belong to the species *curticei,* as they agree in every respect with Ransom's diagnosis. The male is 5·2 mm. long, with spicules 140 μ long. The females are 5·9 and 6·1 mm. long, respectively. All three specimens have the anterior end of the body coiled spirally.

Trichostrongylus vitrinus Looss.

This species has been reported from sheep in this country (*e.g.,* by Boulenger, 1914) and elsewhere, but does not seem to have been previously found in cattle.

Specimens of both these species were obtained from cattle slaughtered at Slateford; and I have to thank both Mr. Jones, M.R.C.V.S., Edinburgh, and Mr. Cochran, Manager of the Universal Casings Company, Slateford, for their kindness in giving me every facility for obtaining and sorting material.

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Abstract.

RESEARCH IN ANIMAL BREEDING.

Professor Sir Edward Sharpey Schafer headed a deputation on March 5 from the Joint Committee of Research in Animal Breeding of Edinburgh University and Edinburgh College of Agriculture to the directors of the Highland and Agricultural Society, in Edinburgh, for the purpose of urging financial support towards the committee's scheme for research in animal breeding. Sir Edward Schafer said that the reason of the deputation for attending was not only for the sake of getting money; they wished also to get the sympathy and co-operation of agriculturists generally in this matter. They were supported by the Development Commission, and most of the money which they received came from the Development Commission. The Commission, however, had lately laid down the principle that they would only give money if other sums were raised locally. Breeding was a scientific problem, and the principles of that problem were being investigated now in a great many cases, and especially at Cambridge. There were certain definite principles which were being discovered and enunciated, which applied practically to all animals and plants as well. The object of the joint committee was to get those principles first of all determined, and if they had been determined, to investigate for themselves whether they were true, and to get breeders throughout the country to co-operate with them both by bringing their own problems before them, and, still more, by getting them worked out. There had been some attempt made at this, and Professor Cossar Ewart, in Edinburgh, had succeeded in improving very greatly the quality of the wool in certain sheep as the result of experiments and suggestions he had made to breeders. It had its utilitarian aspects, although he really stood on the scientific side. They were beginning to see how the discoveries in heredity were going to be applied to animal breeding, and that was really the object of the establishment of this joint committee. They had appointed a director, Dr. F. A. E. Crew, who was only too anxious to co-operate with practical breeders throughout the country in order to get the principles of breeding established.—*British Medical Journal.*

Reviews.

THE CANADIAN VETERINARY RECORD, VOL. II, NO. 2. Published quarterly. Printed by Guild, Ltd., Toronto, Canada.

THIS veterinary publication is in magazine form, and contains quite a modicum of interesting matter. General articles comprise such subjects as bovine hæmorrhagic septicæmia, proteid food-poisoning, contagious abortion and sterility, better dairy cows. In a well-written article Lieut.-Colonel R. L. Mundheuk inveighs against rut and routine in veterinary practice. The title of his contribution is "For the Betterment of the Profession," and it was read before the Ontario Veterinary Association in February of this year.

Two sentences from his paper are worth quoting:—"Nearly all knowledge may be quite simply divided into five parts, answering the questions: 'What?' 'When?' 'Where?' 'How?' and 'Why?' Although the first three questions have been fairly well answered with regard to many of our problems, we remain in comparative darkness as to the 'How?' and in many cases in absolute ignorance as to the 'Why?'" Further, he writes:—"Although we would strongly resist the advancement of the idea that the day of the horse has passed, we will admit that the day of the cow, hog, sheep, goat, dog, cat, rabbit, and chicken is here."

There are five clinical and case reports. This is a quarter's supply, and is worse than our supply over here. In a young and energetic country this section should wake up.

Personals, College Notes and Reviews are among other chief headings.

The Canadian Veterinary Record is quite handy and readable, and contains one unique article 'by A. J. Allen' on the restraint and treatment of the silver-black fox, the breeding and rearing of which is a valuable live stock industry in Canada.

The latest joke from over there is:—"Pa," asked a youngster, "what's a counter-irritant?" "A counter irritant? I guess, my boy, that must be a woman who shops all day and doesn't buy anything."

G. M.

TROPICAL VETERINARY BULLETIN, VOL. IX, NO. 2, 1921. Issued under the direction of the Honorary Managing Committee of the Tropical Diseases Bureau. Tropical Diseases Bureau, 23, Endsleigh Gardens, N.W.1. Price 3s. 6d.

THIS periodical keeps in the front rank as a review of up-to-date literature bearing chiefly on the ailments of animals in foreign lands. there are some very interesting annotations from the Indian "Journal of Medical Research" on the gad-flies, house-flues, and bot flies of Mesopotamia. The prevalence of many cases of ophthalmia among human beings in this country is attributed to the house-fly. As a coincidence some observers here have attributed the spread of mammitis in cattle to the house-fly.

The importance of cardiac tonics in treated cases of foot-and-mouth disease is indicated in connection with an outbreak in Morocco. Calves,

lambs and young pigs were most severely affected, and in the case of the last-named injections of camphorated oil quickly checked the mortality in an establishment containing 10,000 pigs. Trypanosomiasis, bovine coccidiosis, and piroplasmosis have numerous notices, and workers in these fields seem to be busy.

The Annual Report of the Camel Specialist for the Punjab (Mr. H. E. Cross), the Review of Agricultural Operations in India, and the Report of the Acting Chief Veterinary Officer (Mr. V. F. Richardson) for the Uganda Protectorate, are all summarised and commented on in this issue.

In a notice at the end of the periodical its Editor, the Director of the Tropical Diseases Bureau, 23, Endsleigh Gardens, London, N.W.1, states that he will be glad to receive early copies of authors' papers on tropical diseases for notice in the *Bulletin*.

The variety of subjects touched on in the publication, the concise and comprehensive commenting on interesting and often vital points, the printing and get up of the *Bulletin*, are among a few of its very good features. G. M.

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